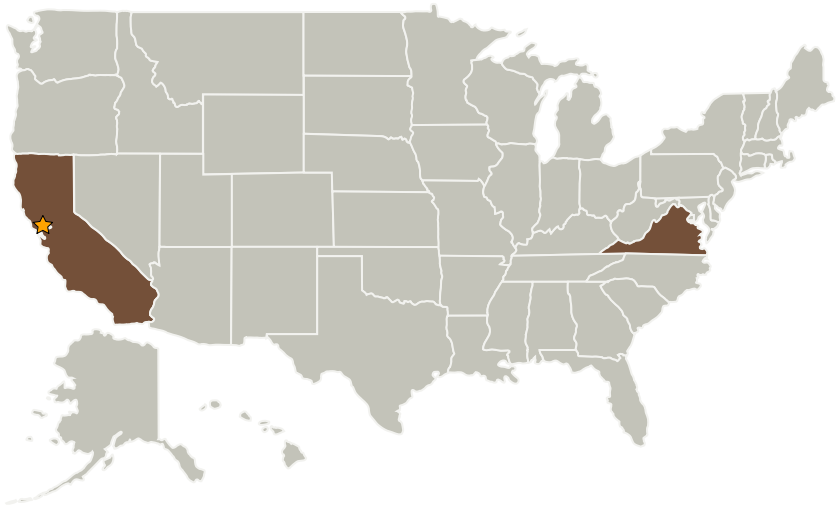
Multi-Robot Planetary Exploration Command and Control, Phase I

Completed Technology Project (2009 - 2010)

Project Introduction

Aurora Flight Sciences, The MIT Manned Vehicle Laboratory (MVL), and the MIT Humans and Automation Laboratory (HAL) together propose to adapt existing software, algorithms, and human interfaces into a software system that performs command and control of a heterogeneous team of mobile robots, operating in a variety of modalities, to perform multi-agent planetary exploration. The system will provide ground control user interfaces and data management that (1) allows for interactive user control of the team in a time-delayed control environment, (2) maintains operator situation awareness, providing a human interface for setting up a task queue that can be autonomously executed with limited/no human interaction, (3) allows the multi-robot team to optimize task performance as geospatial, navigation and other sensor information is gathered, and (4) is supported by recent algorithm and software developments in the military multi-vehicle control regime (including human interfaces).

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Aurora Flight Sciences Corporation	Supporting Organization	Industry	Cambridge, Massachusetts

Primary U.S. Work Locations	
California	Virginia

Project Transitions

January 2009: Project Start

January 2010: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.4 Execution and Control